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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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OfficeAction27074@oliff.com jarmstrong@oliff.com

	Application No.	Applicant(s)
	10/743,179	YU ET AL.
Office Action Summary	Examiner	Art Unit
	MATTHEW J. DANIELS	1791
The MAILING DATE of this communication appeariod for Reply	pears on the cover sheet with the c	correspondence address
A SHORTENED STATUTORY PERIOD FOR REPL WHICHEVER IS LONGER, FROM THE MAILING D - Extensions of time may be available under the provisions of 37 CFR 1.1 after SIX (6) MONTHS from the mailing date of this communication. - If NO period for reply is specified above, the maximum statutory period - Failure to reply within the set or extended period for reply will, by statute Any reply received by the Office later than three months after the mailin earned patent term adjustment. See 37 CFR 1.704(b).	ATE OF THIS COMMUNICATION (136(a). In no event, however, may a reply be ting will apply and will expire SIX (6) MONTHS from (e), cause the application to become ABANDONE	N. nely filed the mailing date of this communication. D (35 U.S.C. § 133).
Status		
Responsive to communication(s) filed on <u>24 J</u> This action is FINAL . 2b) ☑ This Since this application is in condition for allowated closed in accordance with the practice under the process.	s action is non-final. nce except for formal matters, pro	
Disposition of Claims		
4) ☐ Claim(s) 1-3 and 7-30 is/are pending in the ap 4a) Of the above claim(s) 10 and 21 is/are with 5) ☐ Claim(s) is/are allowed. 6) ☐ Claim(s) 1-3,7-9,11-20 and 22-30 is/are reject 7) ☐ Claim(s) is/are objected to. 8) ☐ Claim(s) are subject to restriction and/or Application Papers	ndrawn from consideration.	
9)☐ The specification is objected to by the Examine	er.	
10) The drawing(s) filed on is/are: a) accomposition and accomposition accomposition and accomposition and accomposition and accomposition accomposition accomposition and accomposition accomposi	cepted or b) objected to by the liderawing(s) be held in abeyance. See tion is required if the drawing(s) is objected.	e 37 CFR 1.85(a). jected to. See 37 CFR 1.121(d).
Priority under 35 U.S.C. § 119		
12) Acknowledgment is made of a claim for foreign a) All b) Some * c) None of: 1. Certified copies of the priority document 2. Certified copies of the priority document 3. Copies of the certified copies of the priority document application from the International Burea * See the attached detailed Office action for a list	ts have been received. ts have been received in Applicati rity documents have been receive u (PCT Rule 17.2(a)).	on No ed in this National Stage
Attachment(s) 1) Notice of References Cited (PTO-892) 2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 3) Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date	4) Interview Summary Paper No(s)/Mail Da 5) Notice of Informal F 6) Other:	ate

Art Unit: 1791

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 24 January 2008 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

- (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.
- 2. Claims 1,2, 7-9, 11-14, 16-20, 22, 23, 29, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (USPN 5606396) in view of Yu (USPN 5240532) and Taniishi (USPN 4291505). As to Claim 1, Yu (396) teaches a process which is interpreted to be a stress/strain relief process for a flexible multilayered web stock comprising the following steps:

Providing a multilayer web stock including a layer to be treated (Fig. 5, item 10). The web stock of Yu (396) has many layers (Fig. 4) and therefore it would have been implicit that there was at least one layer having a coefficient of thermal expansion significantly differing from at least one other layer.

Art Unit: 1791

Passing the multilayered web stock continuously through a process (Fig. 5). It is submitted that the process is continuous in view of the web transport speed of 70 ft/min (18:16).

Heating the layers to be treated to thereby create a heated portion of the layer to be treated. Since the heater encompasses the entire web (Fig. 5, item 100), it would created a heated portion of a layer and a layer in proximity which is also heated.

Inducing curvature in the heated portion of the web stock (Fig. 5, item 102).

Cooling the heated portion of the web stock at the curvature (13:54-58).

Yu (396) is silent to (a) the use of a reversed-crown wrinkle-reducing roller having the claimed diameter and differential diameter and (b) the specific temperature during heat treatment being above the glass transition temperature. However, these aspects of the invention would have been prima facie obvious for the following reasons:

(a) Taniishi teaches the use of a negative crown roller to create transverse tension and reduce stress in a material. The basic form of the negative crowning is given by the equation at 5:30-35. One of ordinary skill in the art would have found it obvious to place the roller of Taniishi prior to the heating of Yu (396) (Fig. 5, item 100) in order to provide transverse tension to the sheet material of Taniishi in order to remove wrinkles prior to heating the sheet. One would have optimized the differential diameter of the negative crown roller in view of Taniishi's teaching that the difference in radius is determined by the purpose of the roller and is selected (6:20-53) to achieve the desired result, namely prevention of wrinkle formation (1:40). With respect to the particular diameter, one would have found it obvious to select a roller having a diameter similar to that of the chill roll of Yu (396), such as about one inch (Yu (396), 11:59).

Page 4

Art Unit: 1791

(b) Yu (396) reviews the prior art and teaches that Yu (532) discloses heating the polymer to at least a glass transition temperature and cooling to a temperature below the glass transition temperature while maintaining the material in the shape of an arc (3:10-24). In view of the suggestion to use a similar sheet material and fabrication process, one of ordinary skill in art would have found it obvious to heat to a temperature above the glass transition temperature in order to provide annealing sufficient to achieve the desired curvature upon cooling.

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to introduce the roller of Taniishi into the process of Yu (396) prior to the heating process in order to eliminate wrinkles to the heating process in order to avoid setting or annealing the wrinkles into the belt. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Yu (532) into that of Yu (396) in view of the suggestion by Yu (396) at 3:10-24 and the suggestion by Yu (532) to use the method with an electrostatic imaging member, which is what is disclosed by Yu (396).

As to Claim 2, Yu (396) teaches at least one heat source (Fig. 5, item 100). As to Claim 7, the wrinkle-reducing roller of Taniishi is a concave, reverse crown roller, which would act as a flexible (rubber, Taniishi, 6:55) spreader (1:32-40) roller. As to Claim 8, Taniishi teaches that the negative-crowned roller provides a transverse stretching effect (1:23-40), and Taniishi further teaches that the basic form is determined by equation (1) (5:32-35). Taniishi further teaches that the particular variables are selected according to the use of the roller (6:45-50) with the intended effect of inducing transverse stretching to avoid wrinkling (1:23-40). Therefore, Taniishi recognizes the particular size and shape to be result-effective variables, and optimization of result-effective variables is generally prima facie obvious. See MPEP 2144.05 II and *In re*

Page 5

Art Unit: 1791

Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to optimize the size and shape of the roller of Taniishi and arrive at the claimed values in order to provide transverse stretching in web stock. As to Claim 9, placement of the roller of Taniishi in the process of Yu (396) prior to the heating step would have been obvious in order to eliminate the wrinkles prior to heating, which would anneal or set the wrinkles into the belt. As to Claims 11-13, Yu (396) teaches a heating step (Fig. 5, item 100) in a continuous process (18:15-18), but is silent to the first and second rollers. Taniishi teaches that first and second rollers are desirably used, where the second roller is either a similar negative crowned roller (1:33) (Claim 12) or a straight roller (1:32-33) (Claim 13) in order to create the transverse stress in the support material between the rollers (1:32-40). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the first and second rollers of Taniishi, the first being prior to the heating step and the second is subsequent to the heating step, into the method of Yu (396) in order that the transverse stretch and wrinkle-free state be maintained during the heating process. As to Claim 14, Yu (396) teaches inducing curvature by moving web stock over an arcuate portion of an outer surface [of] a processing treatment cylinder (Fig. 5, item 102).

As to Claim 16, Yu (396) teaches a process which is interpreted to be a stress/strain relief process for a flexible multilayered web stock comprising the following steps:

Providing a multilayer web stock including a layer to be treated (Fig. 5, item 10). The web stock of Yu (396) has many layers (Fig. 4) and therefore it would have been implicit that there was at least one layer having a coefficient of thermal expansion significantly differing from at least one other layer.

Art Unit: 1791

Moving the multilayered web stock continuously through a process (Fig. 5). It is submitted that the process is continuous in view of the web transport speed of 70 ft/min (18:16).

Page 6

Providing a processing tube (Fig. 5, item 102).

Heating the layers to be treated to thereby create a heated portion of the layer to be treated (Fig. 5, item 100).

Yu (396) is silent to (a) the use of a reversed-crown wrinkle-reducing roller having the claimed diameter and differential diameter and (b) the specific temperature during heat treatment being above the glass transition temperature, and (c) providing a heat source "at" the processing tube. However, these aspects of the invention would have been prima facie obvious for the following reasons:

- (a) Taniishi teaches the use of a negative crown roller to create transverse tension and reduce stress in a material. The basic form of the negative crowning is given by the equation at 5:30-35. One of ordinary skill in the art would have found it obvious to place the roller of Taniishi prior to the heating of Yu (396) (Fig. 5, item 100) in order to provide transverse tension to the sheet material of Taniishi in order to remove wrinkles prior to heating the sheet. One would have optimized the differential diameter of the negative crown roller in view of Taniishi's teaching that the difference in radius is determined by the purpose of the roller and is selected (6:20-53) to achieve the desired result, namely prevention of wrinkle formation (1:40). With respect to the particular diameter, one would have found it obvious to select a roller having a diameter similar to that of the chill roll of Yu (396), such as about one inch (Yu (396), 11:59).
- (b) Yu (396) reviews the prior art and teaches that Yu (532) discloses heating the polymer to at least a glass transition temperature and cooling to a temperature below the glass transition

Art Unit: 1791

temperature while maintaining the material in the shape of an arc (3:10-24). In view of the suggestion to use a similar sheet material and fabrication process, one of ordinary skill in art would have found it obvious to heat to a temperature above the glass transition temperature in order to provide annealing sufficient to achieve the desired curvature upon cooling.

(c) Yu (532) teaches that the web is preferably bent into an arcuate shape while the bent segment is heated to at least the glass transition temperature (10:64-68). Heating of the polymer matrix in the bent segment may be effected by any suitable technique, such as infrared, contact, induction, microwave, radio frequency, laser, focused infrared, etc. (11:5-17).

Page 7

It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to introduce the roller of Taniishi into the process of Yu (396) prior to the heating process in order to eliminate wrinkles to the heating process in order to avoid setting or annealing the wrinkles into the belt. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Yu (532) into that of Yu (396) in view of the suggestion by Yu (396) at 3:10-24 and the suggestion by Yu (532) to use the method with an electrostatic imaging member, which is what is disclosed by Yu (396).

As to Claims 17 and 18, Yu (396) teaches a charge transport layer provided by a roll or web stock with the charge transport layer facing outwardly (Fig. 5, item 108). As to Claim 19, the wrinkle-reducing roller of Taniishi is a concave, reverse crown roller, which would act as a flexible (rubber, Taniishi, 6:55) spreader (1:32-40) roller. As to Claim 20, placement of the roller of Taniishi in the process of Yu (396) prior to the heating step would have been obvious in order to eliminate the wrinkles prior to heating, which would anneal or set the wrinkles into the belt. As to Claim 22, Yu (396) teaches a heating step (Fig. 5, item 100), but is silent to the first

Art Unit: 1791

and second rollers. Taniishi teaches that first and second rollers are desirably used, in order to create the transverse stress in the support material between the rollers (1:32-40). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the first and second rollers of Taniishi, the first being prior to the heating step and the second is subsequent to the heating step, into the method of Yu in order that the transverse stretch and wrinkle-free state be maintained during the heating process. **As to Claim 23**, the wrinkle reducing roller of Taniishi would provide the transverse stretching action to either side of the multilayer film of Yu (396), therefore either configuration would be obvious in order to provide a transverse stretching action. **As to Claims 29 and 30**, the combination of Yu (532) with Yu (396) suggests lowering the temperature of the at least one layer by at least about 20 C below the glass transition temperature of the at least one layer (Yu (396), 13:50-57).

Page 8

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (USPN 5606396) in view of Yu (USPN 5240532) and Taniishi (USPN 4291505), and further in view of Yu (USPN 6068722). Yu (396), Yu (532), and Taniishi teach the subject matter of Claim 2 above under 35 USC 103(a). As to Claim 3, Yu (396) is silent to an infrared lamp in proximity to the web stock, and placing a reflector around the infrared lamp to focus energy emitted by the infrared lamp into a heating line on the surface of the web stock. However, Yu (532) clearly suggests (11:10-17) focused heating and use of an infrared lamp for heating a material similar to that of Yu (396), however, Yu (532) does not teach a reflector of the claimed design. However, Yu (722) teaches an infrared lamp (Fig. 6, 6:52-63), and a hemiellipsoidal reflector for focusing energy (Fig. 6, 6:52-63) onto a heating line on a surface of the web stock (Fig. 6, item 30). The

Art Unit: 1791

method of Yu (722) teaches instantaneously elevating the temperature (15:32-35) and therefore it would have been prima facie obvious to one of ordinary skill in the art to combine the method of Yu with that of Yu (396) and the other cited references in order to increase the speed and efficiency of the process by instantaneous heating and in view of the suggestion by Yu (532) that infrared heating is a technique suitable for electrostatic imaging members.

- 4. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (USPN 5606396) in view of Yu (USPN 5240532) and Taniishi (USPN 4291505), and further in view of Wellenhofer (DE 28 33 189 and English translation provided, from which citations are given). Yu (396), Yu (532), and Taniishi teach the subject matter of Claim 2 above under 35 USC 103(a). As to Claim 15, Yu (396) is silent to directing a cooling stream at the heated portion of the web stock. However, Wellenhofer teaches cooling a heated web stock portion and cooling with a cooling stream (Fig. 1, item 11a). It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the cooling stream of Wellenhofer into that of Yu (396) because Yu (396) suggests a high rate of cooling (13:52-58) and the cooling stream of Wellenhofer would provide a high rate of cooling (See Wellenhofer, Claim 2).
- 5. Claims 24 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (USPN 5606396) in view of Yu (USPN 5240532) and Taniishi (USPN 4291505), and further in view of Yu (USPN 6068722). Yu (396), Yu (532), and Taniishi teach the subject matter of Claim 16 above under 35 USC 103(a). As to Claim 24, Yu (396) is silent to "substantially

Art Unit: 1791

instantly" elevating a localized temperature of the at least one layer treated at the processing tube. However, Yu (532) suggests that heating at the processing tube is conventional (10:64-11:17). However, Yu (722) teaches an infrared lamp (Fig. 6, 6:52-63), and a hemiellipsoidal reflector for focusing energy (Fig. 6, 6:52-63), and it is the Examiner's position that this would provide substantially instant temperature elevation at the processing tube. The method of Yu (722) teaches instantaneously elevating the temperature (15:32-35) and therefore it would have been prima facie obvious to one of ordinary skill in the art to combine the method of Yu (722) with that of Yu (396)(in order to increase the speed and efficiency of the process by rapid or instantaneous heating. **As to Claim 25**, Yu (532) teaches that the at least one layer is heated to between 5 C and 25 C over the glass transition temperature (11:18-38).

6. Claims 26-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Yu (USPN 5606396) in view of Yu (USPN 5240532) and Taniishi (USPN 4291505), and further in view of Yu (USPN 6068722) and Wellenhofer (DE 28 33 189 and English translation provided, from which citations are given). Yu (396), Yu (532), and Taniishi teach the subject matter of Claim 16 above under 35 USC 103(a). As to Claim 26, Yu (396) is silent to the infrared lamp extending over the entire width of the web stock. However, Yu (532) suggests an infrared lamp (11:14-17). Yu (722) teaches an infrared lamp (Fig. 6, items 103, 105, 106), but Yu (722) is silent to the lamp extending over the entire width. Although it is submitted that one would have found it obvious to treat the entire film with a lamp of a sufficient size, Wellenhofer teaches that an infrared lamp that would implicitly extend over the entire width of web stock to be treated (Fig. 1, item 3) in order to heat the width of the film simultaneously.

The method of Yu (722) teaches instantaneously elevating the temperature (15:32-35) and it would have been prima facie obvious to one of ordinary skill in the art to combine the method of Yu (722) with that of Yu (396) in order to increase the speed and efficiency of the process by instantaneous heating. It would have been prima facie obvious to one of ordinary skill in the art at the time of the invention to incorporate the method of Wellenhofer with the method of Yu (396) in order to treat the entire web simultaneously without moving the heater, because doing so would increase the speed and efficiency of the process and improve the heating uniformity. **As to Claims 27 and 28**, Yu (722) suggests a hemi-ellipsoidal reflector (Yu (722), Fig. 11, Item 330) and positioning the infrared lamp at a focal point of the reflector such that substantially all of the radiant energy would inherently converge at a second focal point (Fig. 6). In the method of Wellenhofer it would be desirable to provide a lamp over the entire width of the web stock to increase the speed, efficiency, and heating uniformity of the process by heating the entire width simultaneously with the infrared (translation, page 15) lamps of Wellenhofer.

Response to Amendment

7. The declaration under 37 CFR 1.132 filed 24 January 2008 is sufficient to overcome the rejection of claims 1 and 16 based upon Foltz.

The Declarant is listed as an inventor on the Foltz reference (6277534) and states that in the Foltz process lateral heat conduction does inevitably occur beyond the points a and b to reach the prior heat treatment segment, and that when the next segment of the web is heated, the combination of lateral heat conduction and the radiation heat destroys and/or negates at least a

portion of the annealing result that was performed during the previous batch anneal process. (Yu dec. 2-4). The claimed process is a continuous process, and although the distinction between a batch and continuous process is generally deemed to be obvious, the declaration is sufficient to establish that the end result is not the same in the batch process.

With regard to the Taniishi reference as applied in the new rejections above, the declaration is not persuasive. It is conceded that the Taniishi roller is used to generate a linear force in the transverse direction of a substrate, which stretches the substrate as it passes through an apparatus so that wrinkles are not formed on the substrate. However, Declarant concludes that the selected roller is used in a completely different process and under different operational conditions than Taniishi's concave roller and for a completely different purpose. (Yu dec. 5). However, these statements construe the reference too narrowly and argue that the Taniishi reference is limited in its purpose. While the declaration suggests that Taniishi has applicability only inside a electrophotographic imaging apparatus, Taniishi makes no mention of this purpose in the title, the abstract, or Claim 1. In the broadest interpretation of Taniishi, "[t]he present invention relates to a process for producing a negative-crowned roller." (1:7-8). In view of the well recognized purpose of Taniishi, namely to generate a linear force in the transverse direction of a substrate which stretches the substrate as it passes through an apparatus so that wrinkles are not formed on the substrate, one would recognize the applicability of the Taniishi reference to sheet processes where wrinkling is a problem.

The record indicates some discussion pertaining to micro-wrinkles or micro-ripples. It is noted that there does not appear to be any evidence pertaining to microwrinkles in this declaration.

Art Unit: 1791

Response to Arguments

8. Applicant's arguments with respect to the Foltz reference in combination with the declaration under 37 CFR 1.132 filed 24 January 2008, have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Yu (396). The arguments appear to be on the following grounds:

- a) The continuous heat treatment process of the claimed invention is a significant improvement over Foltz's batch process because it prevents reintroduction of stress and strain (by the overlapping of anneal treatments).
- b) Taniishi uses a dual roller system to operate on a paper substrate. The instant invention is used in a completely different process and under different operational conditions.
- c) The other cited references do not remedy the deficiency of the primary rejections.
- 9. These arguments are not persuasive for the following reasons:
- a) This argument is persuasive and the rejection has been withdrawn. However, the Yu (396) reference provides a continuous process which appears to provide a substantially continuous process, as claimed.
- b) As noted above, Taniishi makes no mention of any particular purpose or intended use in the title, the abstract, or Claim 1. In the broadest interpretation of Taniishi, "[t]he present invention relates to a process for producing a negative-crowned roller." (1:7-8). In view of the well recognized purpose of Taniishi, namely to generate a linear force in the transverse direction of a

Art Unit: 1791

substrate which stretches the substrate as it passes through an apparatus so that wrinkles are not formed on the substrate, one would recognize the applicability of the Taniishi reference to sheet processes where wrinkling is a problem. Thus, it appears that one would arrive at the claimed invention by applying the known technique and roller of Taniishi to a process where it would appear to be desirable to eliminate wrinkles, namely the process of annealing a sheet disclosed by Yu (396).

c) Rejections of dependent claims are maintained for the reasons set forth above.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW J. DANIELS whose telephone number is (571)272-2450. The examiner can normally be reached on Monday - Friday, 8:00 am - 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christina Johnson can be reached on (571) 272-1176. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1791

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information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew J. Daniels/ Primary Examiner, Art Unit 1791 4/25/08